
Guest editorial

Advancing service supply chains: conceptualisation and research directions

1. Introduction

Just as much of the recent development in traditional manufacturing sectors has been service-oriented, pure service sectors have played an increasingly prominent role in today's economies. Advancing service offerings, as a key enabler of organisational responses to challenges and opportunities, is associated with industrial leadership that prioritises sustainable development, digitalisation, customisation and servitisation, among other movements. In turn, a key benefit of advancing service offerings, in both pure service contexts and manufacturing firms, is enhanced sustainability via, for example, improved after-market and maintenance services, digitalised offerings and/or new business models that support the sharing economy.

However, developing advanced service offerings and tapping their potential to promote sustainability and opportunities for digitalisation first requires understanding the structures in which services are created, exchanged and delivered – that is, the supply chain. Transitioning to and continually enhancing a service orientation not only alters the roles of established actors in the supply chain but also facilitates the entry of new ones (Sampson, 2000; Sampson and Spring, 2012; Wynstra *et al.*, 2015). To illuminate those dynamics, *Supply Chain Management: An International Journal* recently called for increasingly articulated perspectives on supply chain management (SCM) as frameworks for strengthening research on services (Finne and Holmström, 2013; He *et al.*, 2016; Holmström and Partanen, 2014), extending current understandings of manufacturing supply chains and integrating supply chain perspectives in pure service sectors.

By extension, this special issue seeks to develop the growing interest in services and service management witnessed in fields adjacent to SCM. In marketing, for instance, service marketing has gained traction in the thought processes apparent in established frameworks, publications, journals and conferences. With service operations, operations management has also responded affirmatively to the call for services and the need to design and improve operations processes that transform resources into services. For a similar shift in SCM, in which advancing services has typically been analysed from marketing and operations perspectives, in this issue we redirect attention to the supply chain itself and, in that context, cast light on the potential for enhancing services with input from the articles published herein.

In gathering articles together for this special issue, we attempted to create critical mass for the growing focus on

service supply chains, in an era when that focus, extended across diverse disciplines and publications, has become somewhat diluted, even among work published within the same field. On streaming platforms, by analogy, where we have grown accustomed to listening to songs from any genre in any order, the idea that an album by one artist may have an underlying theme has become similarly diluted. Against that trend, it has been a pleasure to spend time working with this special issue's eight articles throughout the review process and to now, as the artist, reflect on which underlying themes to showcase for readers and SCM at large. Although all eight articles address processes of advancing services, the contexts of their studies and their approaches to advancing service supply chains, as we intended, vary considerably. After all, with this special issue, we did not seek to represent what is most common or of greatest importance in research on services in the field of SCM. Instead, we wanted to draw upon the power of diverse research to collectively break the mould, expand the common scope of SCM, reconceptualise the notion of advancing supply chains and stimulate further research.

Our take on advancing service supply chains first focusses on the concept of service in SCM. Unlike traditional product supply chains, service supply chains depend upon customers to contribute certain resources (Sampson and Spring, 2012, p. 31). We extend that perspective not by highlighting their differences with traditional manufacturing supply chains, however, but by simultaneously focussing on the service in question, the actors involved and the operational focus. In that light, we explain advancing service supply chains with reference to the following:

- the concepts of actors and actor constellations in SCM;
- the notion of advancing services in service marketing; and
- the operational focus taken in service operations.

In what follows, we elaborate upon those three building blocks to understand ways of advancing service supply chains, followed by an overview and summary of the special issue's articles, before concluding this editorial with a description of four underlying themes in the articles and an outline of directions for future investigations.

2. Advancing service supply chains: scope, depth and focus

A key feature of advancing services is the shift in focus to the roles of the actors involved and the actor constellations that they form – in short, the *service scope*. To that end, viewing the supply chain as an inter-organisational structure is often the first step in determining the breadth of service supply chains. Beyond that, identifying the type of service, called *service depth* in literature on service marketing, clarifies which actor(s) will perceive the offering and its value and how. Finally, because the *operational focus* may differ, so too may the activities and/or practices that merit attention. For that final concept, we borrow a classic perspective from operations management by identifying three primary areas of activities: design, delivery and improvement.

2.1 Service scope

From the supply chain perspective, the service *scope* encompasses the dynamic of a true triad with at least three actors – in our case, the supplier, the provider and the customer. This scope is what the current SCM literature has

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Supply Chain Management: An International Journal
26/3 (2021) 297–306
© Emerald Publishing Limited [ISSN 1359-8546]
[DOI 10.1108/SCM-05-2021-599]

opened for. One relevant stream is literature on purchasing, centred on service classification and sourcing services with an upstream focus (Wynstra *et al.*, 2006), as well as the distinction between external and internal service users (Ellram and Tate, 2015). A second, more recent perspective on services in literature on SCM combines an inter-organisational focus on purchasing with service marketing, thereby offering a distinctly inter-organisational view on services in relation to the service triad (Wynstra *et al.*, 2015). Such instances have manifested a multi-actor perspective on services, in which actors engage in providing and using services in a triad as an integrated, sequential structure. Third and last, an adjacent stream addresses servitisation and how it has sharpened focus on customers as active resource providers (Sampson and Spring, 2012) and end users (Finne and Holmström, 2013) in service co-creation (Halldórsson *et al.*, 2019).

2.2 Service depth

Although literature on SCM and operations management has taken the perspectives of services and customers, its traditional, core focus has been somewhat upstream, if not internal, and its extensions into services have been somewhat borrowed from other fields. For example, drawing from marketing, an early school of thought in SCM referred to customer service as part of value creation related to delivery lead times, flexibility, after-sales support and order cycles (Christopher, 2005). In turn, those components of customer service practices have usually been explained with the logic of the total cost of ownership, namely, in terms of pre-transaction, transaction and post-transaction elements (Christopher, 2005). A second example of service depth in SCM stems from transport and logistics, the latter regarded as a service in its own right. Such articles usually refer to literature on logistics service providers (LSP) or third-party logistics (Selviaridis and Spring, 2007) and focus on the outsourcing of make-or-buy activities and relationships between shippers and LSPs. In the earliest examples, such work consistently focussed on transport and logistics providers but soon began to offer more distinct perspectives on types of services and advanced solutions (van Laarhoven *et al.*, 2000), which usually delved deeply into the customers' (e.g. large manufacturers or retailers) own processes – for instance, in terms of fourth-party logistics, in which the service provider assumes a coordinating role in the customer's supply chain (van Hoek and Chong, 2001), whereas that conceptualisation of service in SCM indicates a clear customer-oriented focus and a certain depth of service. To further understand the depth of advancing service supply chains, we have adapted Mathieu's (2001) differentiation of products, services supporting products and services supporting the customer's own product-supporting services, namely, by adding pure services.

2.3 Operational focus

The advancement of services is a topic approached in many disciplines. In operations management, the notion of service operations management:

[...] "is concerned with providing services, and value, to customers or users, ensuring they get the right experiences and the desired outcomes. It involves understanding the needs of the customers, managing the service processes,

ensuring the organisation's objectives are met, while also paying attention to the continual improvement of the services" (Johnston *et al.*, 2012, p. 12).

In that discipline, the notion of service operations management has developed based on four sequentially emerging themes: services linked to traditional manufacturing topics, service quality and cross-functional work, strategic issues and customer loyalty and internet-based services, experiences and human resource issues (Heineke and Davis, 2007). Those themes may indicate a shift away from traditional areas of operations management. Against that trend, as Johnston (1999, p. 104) has argued, "Re-focusing on the traditional strengths of operations management, such as performance quality, design, and operational improvement, might help provide a greater rigour to the developing subject of service management". Key to those traditional strengths is the underlying process-oriented focus on teaching and research, often divided into design, delivery (e.g. focussed planning, execution and assessment) and improvement (Holweg *et al.*, 2018; Slack *et al.*, 2010). Relative to service management, which focuses on customers' needs and experiences, operations management adds a focus on back-office operations concerning the design and delivery of services (Johnston, 2005). In that light, service SCM, an area that broadly focusses on all aspects of service supply – sourcing, manufacturing, delivering and taking the customer's perspective (Sampson and Spring, 2012) – could be fertile ground for making desired contributions to research on service management.

3. Contributing articles

In this editorial, we depart from the position that services are inseparable from the structures in which they are developed, delivered and consumed – that is, their supply chains. Given the variety of services being studied, service supply chains can be quite diverse, as demonstrated by the promising range of articles submitted to this special issue. Herein, the eight selected articles display an array of differences in the contexts, methods, theories and approaches to service supply chains adopted in their corresponding studies. Such a range of articles (Table 1) made it necessary to involve reviewers with various types of expertise, to whom we wish to express our gratitude for upholding the journal's standard procedures throughout the review process.

Considering the various ways of clustering the articles, we developed emerging codes while analysing the articles, both to capture implications of advancing service supply chains and to identify areas of research that could support further advancements in the future. In turn, that analysis of the articles led us to four clusters: actors' roles, governance, proximity to customers and context awareness and organisational capabilities.

3.1 New actor roles

A service-oriented perspective on supply chains often highlights how current actors assume new roles or how new actors become part of service offerings and, by extension, the supply chain (Wynstra *et al.*, 2015). As service offerings become more explicit and services are developed to support customers in the various phases of using products, actors with new forms of competence in delivering such services become necessary.

Table 1 Overview of articles in the special issue

Title	Purpose	Context of study	Method and data collection
"Distributed Manufacturing as an Opportunity for Service Growth in Logistics Firms"	To investigate a novel route towards service growth followed by the LSP by integrating upstream into the value chain and the resultant consequences in the configuration of the servitisation strategy, SC structure and allocation of roles	Logistic service provider	Longitudinal exploratory case study with interviews and secondary data (e.g. company reports)
"Advancing the Understanding of Pharmaceutical Supply Chain Resilience Using Complex Adaptive System (CAS) Theory"	To advance the knowledge of pharmaceutical supply chain resilience using complex adaptive system theory (CAS)	Pharmaceutical industry	Exploratory research with interviews
"The manifestation of coordination failures in service triads"	To investigate governance in service triads, specifically studying significant steering and connecting coordination failures, to reveal typically hidden characteristics and consequences	Knowledge-intensive professional services and military services	Single-case study with secondary data from a report on the causes of a fatal accident
"Controlling and Enabling Practices to Manage Supply in Online Service Triads"	To understand which controlling and enabling practices are used, how the numerous supplying partners are managed and how positive network effects are generated in online service triads	E-commerce	Single-case study with field notes and observations, internal documents, informal talks and interviews
"Creating Highly Reliable Health Care Organisations through Reverse Exchanges"	"Creating Highly Reliable Health Care Organisations through Reverse Exchanges"	Health care	Exploratory case study with interviews, secondary data and patient feedback narratives
"Relationship Heterogeneity in Taiwanese Maritime Logistics Service Supply Chains"	To explore the structure of relationships within the maritime logistics networks and determine why they vary	Maritime logistics network	Exploratory study with in-depth semi-structured interviews, observations and company documents
"Alignment Capabilities of Big Data's Value Creation in the Context of Service Delivery Processes"	To explore value creation capabilities of big data through an alignment perspective	Wind turbine generator manufacturer	Single-case study with interviews
"Designing Digital Public Service Supply Chains: Four Country-Based Cases in Criminal Justice"	How do public service supply chains redesign their joint service delivery processes into digital processes?	Criminal justice	Exploratory multiple-case study with interviews, documents, field visits and observations

A common set-up in servitisation positions a manufacturer that extends the scope of the business model from the point of sale to the point of use in so-called "distributed manufacturing". As a result, a new, critical role for LSPs emerges, namely as the key points of contact with consumers and end users. On that topic, "Distributed Manufacturing as an Opportunity for Service Growth in Logistics Firms" reports a study on how the roles available to LSPs shifted when their manufacturing partners engaged in globally distributed manufacturing. The article presents empirical data describing the practices involved in the process of advancing services, one that the authors stress is not always forward and unidirectional but can oscillate back and forth along a continuum from products to services because it depends upon a deliberate developmental process. The article's focus, however, is not the manufacturer but the LSP that encounters new opportunities to grow in a highly competitive market. The proximity of the LSP, now repositioned in the value chain, to customers can be leveraged to make the LSP pivotal in delivering services and actively participating in distributed manufacturing and, in turn, able to capture a larger share of the value created. The new roles and partnership established enabled the manufacturer to offer

new product-service solutions without having to develop in-house production capabilities, which the LSP developed instead. The new valued post-positions thus altered the positions of actors in the supply chain and increased the manufacturer's dependence on the LSP.

New roles can also surface from joint efforts that result in strategic alliances. Pharmaceutical supply chains are examples of such structures, ones that can engender resilience in the supply chain, such that the new role resides in the joint structure – the strategic alliance – instead of being assigned to a single actor. In that context, the authors of "Advancing the Understanding of Pharmaceutical Supply Chain Resilience Using Complex Adaptive System (CAS) Theory" used qualitative data from interviews with various types of actors in a pharmaceutical supply chain to study resilience from the standpoint of CAS theory. Amid the COVID-19 pandemic, understanding resilience in pharmaceutical supply chains continues to be paramount, and the article shows that viewing pharmaceutical supply chains as a CAS focussing on internal, external and co-evolutionary elements advances the understanding of resilience in that context. The article also advances knowledge about service supply chains by identifying drivers of vulnerability (e.g. power and conflict)

and resilience-oriented strategies, including joint decision-making and the vertical integration of actors in the supply chain. The article further contributes to CAS theory by pinpointing the interactions and integration of supply chain actors in developing such strategies (e.g. vertical integration) in terms of strategic alliances in which information-sharing and joint decision-making can occur. On the topic of advancing services, those alliances also altered the various actors' roles in relation to the services provided.

3.2 Need for new forms of governance

Because services are intangible, contracts play a starring role in managing the exchange and delivery of service offerings (source). For complex offerings such as knowledge-intensive professional (KIP) services, however, the traditional boundaries and scope of service contracts as a means of governance need to be revised. In response, studying triadic interactions over a longer period, the authors of "Idiosyncratic Challenges of Knowledge Intensive Professional Service Triads" view KIP service triads as forms of service supply chains, with particular focus on the governance of a KIP service supply chain in multilevel interactions among various actors in a project-based setting. Responding to the need for governance that arises as a consequence of outsourcing KIP services, their study involved examining how involving such services has influenced the governance of service supply chains. Among its more novel aspects, the context studied encompassed both commercial and governmental actors engaged in highly complex military services, which afforded a unique opportunity to capture the variety of issues at play during the multi-faceted investigation of governance following a fatal accident. Although structurally similar to other service triads, the KIP triad faced the challenge of weak customer-supplier ties despite strong buyer-supplier ties. As such, the KIP supply chain had distinct multilevel features, as illustrated by the combination of governance mechanisms. The governance of the service studied relied upon informal mechanisms of coordination (i.e. relational governance built upon the continuity of staff and individual relationships); however, those conditions proved to be difficult to achieve, much less sustain. The KIP service triad was also multilevel in that it referred to not only multiple organisations (i.e. at the meso level) but also multiple levels, ranging from interpersonal relationships (i.e. at the micro level) to relationships with governmental bodies (i.e. at the macro level).

As knowledge about governance in service contracts departs from established supply chains, service triads based solely upon digital platforms not only provide new means of exchanging goods and information but also call for new perspectives on governance. Addressing that dynamic, "Controlling and Enabling Practices to Manage Supply in Online Service Triads" describes a service triad for online services consisting of a multilateral platform, supplying partners and consumers that focussed on the exchange of products in a business-to-consumer setting in which the platform added value (e.g. high volumes of efficient transactions). However, challenges have arisen in governing the many supplying partners in the triad to, for instance, prevent misbehaviour that could cause the withdrawal of other partners. In a key contribution, the article stresses,

backed by in-depth, empirical data, how a rather open service triad can use a combination of controlling and enabling practices for governance, which stands to alter understandings about how to deliver services that enhance the online service triad's value by increasing sales and attracting more customers and suppliers. In that light, arguing that contractual and relational governance is insufficient, the article underscores the need for managerial practices to be involved in governance.

3.3 Proximity to customers

Because advancing services increases proximity to customers and their value creation, supporting such value creation requires providers to develop a functional joint sphere with their customers (Grönroos and Voima, 2013). In service supply chains geared towards delivering pure services in terms of service depth, that proximity to customers becomes a key concern for the supply chain's actors.

As shown by one of the articles, being open to direct feedback from customers – in the article's case, patients – in the form of narratives can create such a joint sphere, as well as enhance learning and support improvements based on customers' needs. The article, "Creating Highly Reliable Health Care Organisations through Reverse Exchanges", particularly concerns the use of feedback from patients by care providers to stimulate service improvements. Submitted on an online platform, the feedback reaches providers in the form of narratives that, as the authors show, captures the true "voice of the customer" and indeed helped to stimulate reflections on the adequacy of the current supply chain and service provision. Thus, the feedback platform serves as a basis of reverse exchange supporting the improvement of current service offerings. The article shows that such feedback can prompt changes and concrete improvements and that the immediacy and transparency of feedback enabled by the platform supports the empowerment of staff. Beyond that, reflecting on the narratives instilled a sense of ownership over the feedback and of closeness to the patients that also influenced and supported intra-departmental collaboration. In closing, the authors argue that the ability to engage in improvement and learning based on reverse exchange is pivotal to becoming a highly reliable organisation.

Also in the context of pure services, "Relationship Heterogeneity in Taiwanese Maritime Logistics Service Supply Chains" position maritime logistics as the service context and the management of relationships as a key characteristic of service supply chains. Maritime logistics is regarded as a network-based service able to deliver services in response to customers' requirements, an ability that depends upon the relationships among the service network's actors. Variation in the structures of those relationships creates heterogeneity in the output provided to customers, analysed as so-called "structural holes" by drawing on social network theory to explore the underlying factors resulting from such heterogeneity. In keeping with the networked nature of maritime logistics, the authors adopted a multi-actor perspective, which affords an understanding of how the service relationships can differentiate, for example, container lines in their attempts to respond to customers' demands. By extension, the authors illustrate how the derived-demand

nature of logistics services benefits from taking a social network perspective, particularly by identifying factors relevant to the emergence of heterogeneity that influence the strength of the relationships in the maritime logistics network: service complexity, type of cargo, type of owner, role of the port and trade route. Last, applying social network theory yielded considerable insights into, for example, structural holes and weak links in relation to customers, which could affect potential customer-driven service innovations.

3.4 Context awareness and organisational capabilities

On the topic of digitalisation and service advancement, big data doubtlessly provide numerous possibilities for supply chains by supplying the means to collect and store large amounts of data (e.g. concerning customers' behaviour). However, the actual use of big data and the value extracted from doing so are far more limited. An underlying position in "Alignment Capabilities of Big Data's Value Creation in the Context of Service Delivery Processes" is that creating value from big data cannot be supported solely by adding analytical and information technology (IT) capabilities but also demands the development of new organisational capabilities. In the article, the authors investigate the value-creating capabilities of big data by studying a service division in a wind turbine generator manufacturer. As a result, they identified 15 alignment-oriented capabilities and formulated seven propositions for achieving the alignment big data in service processes and, in turn, the required value creation. The 15 alignment-oriented capabilities are divided into critical and complementary ones; whereas critical capabilities directly affect big data's value creation, complementary capabilities moderate that effect. The article also provides hands-on examples of those capabilities, including computerised maintenance management systems supporting the critical capability "IT-performance alignment and analytical competence centres to support human-organisation alignment". In that way, the article keeps focus on the provider as a focal actor while considering ways to develop capabilities needed to create value from big data.

Moving from the private to the public sector but nevertheless maintaining focus on possibilities inherent in digital transformation, "Designing Digital Public Service Supply Chains: Four Country-Based Cases in Criminal Justice" does not focus on capabilities needed to exploit value from digital transformations but on the critical need to remain aware of context. The authors observe a critical difference between digitisation and digitalisation when using information and communication technology (ICT) to redesign public service supply chains: "Digitization directly converts physical flows of information into digital flows, mainly redesigning the modes of input and output of the service supply chain. In contrast, digitalization redesigns processes, procedures and practices, in addition to redesigning the modes of input and output, to fit the support functionality of digital systems and technologies". Considering that difference, the article focuses on inter-organisational ICT in the context of criminal justice and shows that applying ICT does not *per se* change the coordination and management of the supply chains. On the contrary, such changes require conscious choices to be made. Underlying that views are results showing that digitalisation is neither superior to digitisation nor a sign of a more mature

digital transformation but a result of choices made and deliberate consideration of how to fit a specific context (e.g. not to achieve a fully integrated digitalised supply chain in relation to professional independence).

4. Research themes

Across all articles and clusters related to actors' roles, governance, proximity to customers and context awareness and organisational capabilities, several interesting research themes emerge. Services, both in theory and practice, perhaps developed faster than the literature addressing other parts of service components (e.g. relationship management and service triads). As a consequence, advanced services could be initiated in settings while other parts necessary for the services are not in place. For example, services could be offered alongside products, although the customer's sourcing strategy has not kept pace. Avoiding such situations necessitates considering the scope and depth of service as integrated parts, both conceptually and practically, in addition to supporting a variety of operational focuses (i.e. design, delivery and improvement). In the following, we elaborate upon four research themes that capture current service advancements in supply chains.

4.1 Multifaceted actors

Advancing services naturally challenges the ways in which value is created and what is needed to enable that value creation. In response, literature on supply chains has highlighted the need to shift from sequential structures to triadic ones (Wynstra *et al.*, 2006) and sharpen the focus on customers as resource providers and focal actors (Holmström and Finne, 2013; Sampson and Spring, 2012). As service supply chains have continued to spawn additional challenges for actors and their value-creating processes, the articles in this special issue point to the need for actors to be capable of shifting between as well as occupying multiple roles and the fact that certain services require roles that cannot be filled by a single actor but require strategic alliances of actors (Box 1).

Box 1.

- The boundaries and content of existing roles need to be challenged.
- Roles cannot always be filled by single actors but require collaboration (e.g. strategic alliances).

First, the article on distributed manufacturing illustrates that, for actors in the supply chain, advancing services is possible by not only relocating along the value chain and assuming a new role. Instead, roles can be challenged and actors can become multifaceted – for instance, be both suppliers and providers. As further illustrated in the article, service advancement is a matter not of focussing on traditional roles but identifying the capacity of the supply chain and how it can best be used to support value creation in close proximity to customers. Thus, as distributed manufacturing builds upon existing capacity and proximity to customers – namely, an LSP – it is a reasonably fast way to advance services. Even so, it warrants

consideration of the risks related to possible changes in customers' loyalty and the disintermediation of the supply chain.

Second, as elaborated in the article on pharmaceutical supply chains, actors need to be flexible and move between, or assume, several roles. At the same time, some roles cannot be played by one actor. The authors studied a case in which actors formed a strategic alliance to establish resilience in a supply chain. Applying the concept of value co-creation in services and stressing the provider's role not to create value on its own but to facilitate customer-led value creation (Grönroos and Voima, 2013), the authors show that the strategic alliance was a means to fill the provider role because individual actors could not access the resources needed to ensure the reliable supply of pharmaceuticals.

4.2 Suitability of service governance

Service governance expands in both scale and scope in contexts with multifaceted actors and the renewal of a single focal one. A key attribute of services is their inter-organisational nature, owing to their creation and delivery in a dyadic exchange between a provider and customer (Grönroos and Voima, 2013). Traditionally addressed with the metaphor of a contract, that attribute has been further developed by conceptualising the service supply chain as a service triad (Wynstra *et al.*, 2015) and the increased formalisation of the purchasing of services (Pemer *et al.*, 2014). Advancing service supply chains extends current view on the suitability of service governance and responds to recent calls for increased attention to contracting in service triads (Ellram and Tate, 2015; van der Valk and Wynstra, 2014) by suggesting that the depth of services requires a corresponding structure (Box 2).

Box 2.

- Service governance needs to accommodate the circumstantial features of services.
- Governance can be layered by existing at various levels (e.g. authorities, organisations and individuals).

Highly advanced services require supply chains that absorb the circumstantial features of the service and integrate the depth with scope to enhance the suitability of service governance. As similarly shown in a product-based context analysed from the perspective of the portfolio (Krajlic, 1983), highly advanced or even KIP services entail a greater risk than standardised services and, for that reason, need to take a different approach to relationship management or governance from the one taken by standard services to absorb the circumstantial features of the advanced service.

To this end, service governance must suit the service scope and -depth. Transitioning from providing basic, often product-based services to providing offerings that connect directly with the customer's processes requires service governance that accommodates the complexity of the offerings that service contracts alone cannot address. On the one hand, *horizontal service governance* accommodates professional and knowledge-intensive services that entail more actors in the horizontal dimension than ones engaged in

the immediate service exchange. Another fit regards the level of actors. Traditionally, however, the service supply chain departs from positioning a focal organisation at the key level. On the other, *vertical service governance* is suitable when advanced services also entail layered connections: at the individual level, at which, for example, a service user who is not also a service buyer interacts with the providing organisation; and above the organisational level, where governmental bodies may also act as mechanisms of governance (e.g. in contexts in which public and private organisations are engaged in service exchange).

4.3 Creation and population of a joint sphere

Regarding proximity to customers as pivotal in being able to advance services, the articles included in this special issue illustrate how the perspective of a supply chain is fruitful both for identifying the need to create a joint sphere for value co-creation between actors and to populate the sphere with processes and practices supporting value co-creation (Box 3).

Box 3.

- New joint spheres should be created between actors to support the co-creation of value in services.
- The joint spheres should be populated with practices and processes that enhance proximity to customers.

Advancing service offerings is often driven by a desire to increase proximity to customers, create loyalty and, in that way, generate competitive advantage (Gebauer, 2007; Oliva and Kallenberg, 2003). However, enabling the co-creation of the value-added service requires direct connections between customers and providers. In that context, taking the perspective of a supply chain perspective is critical, as it not solely focussing on the dyadic relation between a provider and a customer. As shown in the article on Taiwanese maritime logistics, a supply chain perspective in combination with social network theory can be a vehicle for identifying actors with weak or no links to each other – that is, a situation lacking the joint sphere that is needed to enable their value co-creation (Grönroos and Voima, 2013). Moreover, if the operational focus is on design or innovation, then a lack of a joint sphere, or even a limited one, will decrease the possibility of service innovations, because service innovations more often the product innovations arise in direct customer-provider interaction (Grenmyr *et al.*, 2014).

Although a joint sphere may exist between a provider and customer, a service advancement in a supply chain increases the chain's complexity, because more organisations are necessarily involved and, with them, numerous individuals with various responsibilities and levels of authority. Moreover, if the services offered are enabled by digitalisation, then the joint sphere between the provider and customer is more intensive not only due to service advancement but also because sensor data can flow continuously between actors and thus require new data-processing skills use in operations management (Gölzer and Fritzsche, 2017). Beyond that, if the operational focus is on improvement, then new types of

digitally connected services will challenge established improvement processes and practices, both in terms of using sensor data but also because customers demand providers who respond rapidly to their feedback about the services used (Birch-Jensen *et al.*, 2020). Thus, the joint sphere is subject to continual change and needs to be populated with interactions that stimulate learning and value co-creation. That dynamic is exemplified in this special issue by the article on highly reliable health-care organisations. In that case, an online platform was used to engage more individuals in directly accessing service delivery by way of customer narratives, a practice shown to enhance improvement arising from interaction in the joint sphere.

4.4 Strategic digitalisation

Many service advancements are built upon a digital component, and that pairing is most often regarded as positive, if not revolutionary. However, in this special issue, one theme could be described as underscoring the importance of engaging in digitalisation in a needs-based way. Drawing from the concept of strategy as “how it [an organisation] initiates and reacts to changes in the network” (Holmen and Pedersen, 2003, p. 418), we identified two challenges in the context of digitalisation and services (Box 4): that initiating a digital transformation requires considering existing and necessary processes of value creation, and that reacting in meaningful ways to a digital transformation means developing new capabilities beyond those related to IT.

Box 4.

- The scope and width of digitalisation should be deliberately chosen based upon how value is created.
- Advanced organisational capabilities are needed to create value from digitalisation and big data.

In SCM, the integrative nature of connectivity is often regarded in positive terms, such that the more that a supply chain is digitalised, the better. Distinguishing *digitisation*, defined as converting existing analogue processes into digital ones, from *digitalisation*, defined as changing the underlying processes, content, or actors to make use of digital technology (Parviainen *et al.*, 2017), the underlying reasoning appears to be that digitalisation is always superior to digitisation. However, as with all transformations, a digital transformation at any level comes with risks (e.g. risk of being locked into existing processes of value creation as they are digitised). Another risk identified in this special issue is that digitalisation that involves integrating actors in a supply chain might challenge the underlying value creation – for instance, the needed independence between actors in the case of criminal justice. Thus, in such a context, digitalisation and the integration of processes that cross organisational boundaries are not superior to the digitisation of parts of those processes.

For that reason, we adopted a more intra-organisational perspective, especially on an organisation's reactions to digitalisation. Digitalisation comes with many challenges related to using new, extensive data in practical ways (Brinch *et al.*, 2018), with one challenge in operations management being the role that

practitioners need to assume to use the results of digitalisation (Elg *et al.*, 2020a). In the article on alignment capabilities, a key lesson is that benefiting from digitalisation requires not only new IT capabilities but also a range of other organisational capabilities to be able to identify and realise potential value in a specific context. In sum, as a way to advance services, digitalisation is neither a panacea to challenging interactions in supply chains nor a quick fix to enhanced value creation. To best use, a digital transformation of any kind necessitates deliberate strategizing about what transformations to initiate and how to react to them (e.g. by developing certain organisational capabilities).

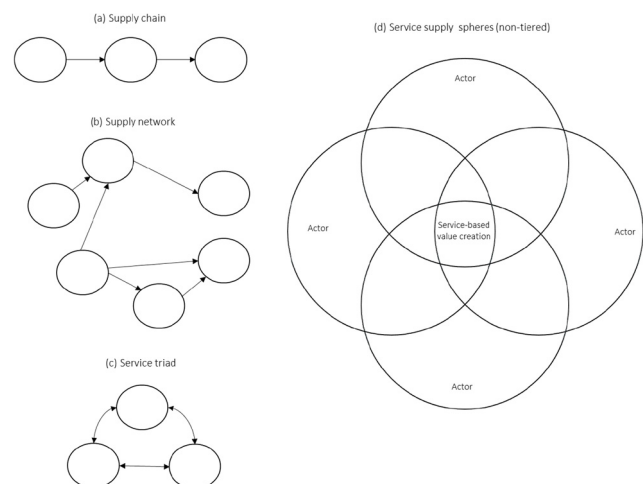
5. Research directions for advancing service supply chains

In terms of their advancements from the three perspectives of service scope, service depth and operational focus, the articles in this special issue vary. Notably, however, as service depth increased and pure services were increasingly offered, a parallel shift occurred in the service scope of the research, often from the provider to the customer as the focal actor. Following Johnston (2005) in showing that actors in operations-oriented fields can contribute to studies on service management based on their existing knowledge about back-office operations of services, researchers also need to maintain a traditional focus on providers and the more upstream parts of service supply chains.

Supply chains can be viewed as analytical constructs of service exchanges between providers and customers. A cornerstone in the conceptualisation of advancing supply chains is regarding them as structures that can be designed and managed in inter-firm relationships (Halldórsson *et al.*, 2007). Thus, advancing service supply chains can refer to either the service offering or the advancement of supply chains as structures, which together are traditionally viewed as separate concepts: that a structure exists and, within the realm of that structure, a service is exchanged.

All the four inter-organisational structures in Figure 1 are partial compared with the legal entity of a firm, with its inherent coordination and control mechanisms. Following the logic of supply chains and supply networks [Figure 1(a) and 1(b)], those

Figure 1 Four analytical constructs of service supply chains



supply chains offer a sequential approach to services, and as structures, they isolate supply from market and consumption. That view has been extended to service triads [Figure 1(c)], which have been used as metaphors for inter-organisational structures that capture the particularities of services, including the different roles of actors (Wynstra *et al.*, 2015), the bidirectional nature of services (Sampson, 2000), and the fact that actor constellations may differ depending upon the service provided (Wagner *et al.*, 2017).

Considering the four themes that have emerged from this special issue with respect to the first three inter-organisational concepts in Figure 1, we suggest that the traditional form outlined by the supply chain as an analytical construct needs to be revisited to truly capture the particular nature of services. This is illustrated in Figure 1(d), the service supply sphere, building upon Grönroos' (1982) dual actor perspective and Ahrne and Brunsson's (2011) "organization outside organizations". As one single firm, or one focal actor per does not create value in

isolation, they are only partial with respect to the features of services. To overcome some of the constraints inherent in the first three structures in Figure 1(a)–(c), the service supply sphere is more complete with respect to services in at least three respect:

- 1 from fixed to fluent roles;
- 2 from a tiered structured to an overlapping and more simultaneous one; and
- 3 points of supply and consumption are separate in the supply chain logics but the service concept presumes customer proximity.

By breaking the product-centric logic of a supply chain structure, we follow the notion that customer value is not inherent in an object such as a product but derives from the customer's experience from that product (Leroi-Werelds, 2019). Figure 1(d) connects all relevant service actor joint spheres. Compared with the tiered structure of a traditional supply chain, the non-tiered service supply sphere puts all actors at the same table. Whereas service triads concern actors

Table 2 Directions for future research on advancing service supply chains

Theme	Highlights, exemplary research problems and questions
Roles	For single actors, roles can be flexible, and velocity in switching roles may be necessary. In other cases, actors may assume new roles without leaving their current ones. By contrast, for complex services, roles may be embodied by the relationship between actors. Thus, the overarching question is what roles are needed and fit the service offered. To further explore roles in service supply chains, we propose research focussing on: The flexibility of actors within specific roles (e.g. capabilities needed to assume responsibility for new parts of the value chain); Switching between roles, including the ability and velocity of actors to switch from being customers to being providers; Dual roles (i.e. occupying two roles at once), as when customers switch to being suppliers of, for instance, information about products in use purchased by their suppliers and thereby reverse the business model; and Joint and relational roles, which offer benefits if inseparable from a single actor (e.g. creates resilience to disruptive events and changes)
Governance	When providers servitise new challenges arise in relation to governance, including: Having the customer's sourcing strategies keep pace with the provider's service advancements; Developing sourcing strategies for advanced services and complex solutions (e.g. integrating innovation and new technologies from new and current partners); Complexity of governance structures suitable for simple services offered within the realm of collaborative consumption and sharing economy; and Implementing advanced, knowledge-intensive professional services that rely upon layered governance beyond mere service-level agreements or contracts
Joint spheres	Creating and populating joint spheres that support value co-creation require an understanding of: Determining "what is the right supply chain for your service strategy?"; The use of customer feedback as a basis for improvements and innovations; How the non-tiered, concurrent feature of joint spheres fosters a truly joint approach to service innovation (i.e. shifting from either provider- or customer-driven innovation to engaging three or more actors in a joint instead of tiered structure); Joint spheres with limited interactions are not necessarily regarded as so-called "structural holes" but may serve the function of separating actors in cases where value is created independently (e.g. relation between political systems and legislative and judiciary systems); and New practices and processes are needed to support data-driven value creation that resides in the joint sphere's proximity to customers
Strategic digitalisation	A critical, problematising view on digitalisation and digital connectivity in the supply chain requires: Investigating the operational role of supply chain professionals when making informed decisions about the digital connectivity of and in supply chains; Service capabilities needed to release the potential of, e.g. Big data analytics, Artificial Intelligence, Internet of Things and self-service technologies; Squaring digitalisation with servitisation require new combination of human-to-digital interfaces, e.g. between patients and doctors in the health care sector; Forging provider–customer commitment resulting from investments in digitalising existing processes; and Overcoming innovation inertia and/or ripple effects caused by disruptions in supply chains
Research design	As value from services is co-created in interaction, methodological approaches should be aligned and exploit interaction, e.g. by service action research; and Use of secondary data can enable studies of and critical learnings from service failures

and their sequential interactions, service supply spheres also add an explicit focus on joint value creation and are less sequential.

Following the logic of service supply spheres and the studies included in this special issue, some insights and directions for future studies on advancing service supply chains are proposed in Table 2.

Having focussed on topics related to advancing service supply chains, we now turn to methodological approaches. At base, because the call for submissions encouraged qualitative research strategies, the studies presented in the articles involved using such strategies, albeit backed by various methods of data collection, including interviews, observations and archival studies. Although such research designs accommodate the need for services to be studied in close proximity to their delivery, the bidirectional nature of services and the potentials to explore the proximity between actors involved are not necessarily captured in the designs followed. Therefore, we encourage future research to be based on collaborative approaches – for instance, service action research – to study interactive phenomena with a truly interactive methodological approach (Elg et al., 2020b). Added to that, interactive approaches can benefit from secondary evidence, as in the article on KIP services, which affords the possibility of learning from failures normally difficult to capture in contemporary settings, nevertheless these failures contribute to advancing current understandings of service supply chains.

A deliberate limitation of this special issue was its focus on service supply chains themselves, not their role in large industry agendas (e.g. Industry 4.0). Such a focus could have been feasible and would have likely resulted in more articles related to servitisation, digitalisation and sustainability. The articles presented in the issue do relate to servitisation and, to some extent, even digitalisation, whereas attention to sustainability is missing. However, by focussing on requirements for advancing and transforming service supply chains, we believe that the knowledge contained in this issue can be leveraged to support sustainability as well.

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